ABSTRACT OF THE DISCLOSURE

A semiconductor memory device that includes a composite Al_2O_3/HfO_2 dielectric layer with a layer thickness ratio greater than or equal to 1, and a method of manufacturing the capacitor are provided. The capacitor includes a lower electrode, a composite dielectric layer including an Al_2O_3 dielectric layer and an HfO_2 dielectric layer sequentially formed on the lower electrode, the Al_2O_3 dielectric layer having a thickness greater than or equal to the HfO_2 dielectric layer, and an upper electrode formed on the composite dielectric layer. The Al_2O_3 dielectric layer has a thickness of 30-60Å. The HfO_2 dielectric layer has a thickness of 40Å or less.